

## REMARKS

Claims 1, 2, 4, 8, 9, 11 and 16 were rejected under 35 USC §103(a) as being unpatentable over Bancroft et al. (U.S. Publication No. 2002/0165638), Guldner (U.S. Patent No. 5,758,298) and Estkowski (U.S. Patent No. 6,799,087) (“Estkowski”). This rejection is respectfully traversed with respect to these claims as amended herein.

Independent claims 1, 8 and 16, as amended, recite a robot control device, method and a program that recognizes the designation content of a designator based on collected voice and a captured image. For example, claim 1, as amended, recites (with emphasis added):

**a movement ease decision part for deciding movement ease to the specific position based on the current position of the robot estimated by the self-position estimation part and the position of the obstacle from the map data base responsive to the movement to the specific position being required, wherein the current position of the robot indicates at least one of a warning area, a margin area and a safety area in which the robot exists, and the warning area is set based on the position of a circle where a distance between representative points of the surface of the obstacle is set as a diameter of the circle;**

The current position of the robot indicates at least one of a warning area, a margin area and a safety area in which the robot exists. Support for this amendment is found throughout the specification, including, for example, pages 32-35 and FIG. 7.

These aspects of the claimed invention are not disclosed or suggested by Bancroft alone or in the combination suggested by the Examiner. At best, Bancroft merely discloses a robot system in a retail environment (Abstract). The Examiner acknowledges that Bancroft does not disclose (1) the position of the obstacle is recognized by a group of intersections between a plurality of lines from the current position, and (2) the current position of the robot indicates at

least one of a warning area, a margin area and a safety area in which the robot exists, and depends on Guldner and Estkowski to disclose the claim elements related to these areas.

However, Guldner or Estkowski does not remedy the deficiencies of Bancroft. Guldner discloses an autonomous navigation system for a mobile robot to move through a workspace to a predetermined target point (Guldner, Abstract). The Examiner cited Fig. 5-8, column 11, lines 31-column 12, line 45 of Guldner as allegedly disclosing the claimed features. However, this portion of Guldner merely discloses a safety area and the Examiner equated Guldner's safety area to the claimed warning area and the area outside the safety area to the claimed safety area. Assuming that the Examiner's interpretation of Guldner is true, Guldner fails to disclose the claimed warning area which is set based on the position of a circle where a distance between representative points of the surface of the obstacle is set as a diameter of the circle. Furthermore, Guldner fails to disclose a margin area as claimed.

Estkowski does not remedy the deficiencies of Bancroft and Guldner. The Examiner depends on Estkowski to allegedly disclosing a mobile robot having at least one of safety area, margin area and warning area (Estkowski, Fig. 4, 2:14-45, 3:36-41 and 9:14-59). However, Estkowski sets the multiple zones based on object saturation (Estkowski, 10:21-59), which is determined by searching for a minimally populated region outside a second zone having a minimum set of objects. As such, Estkowski does not disclose deciding movement ease to the specific position based on the current position of the robot estimated by the self-position estimation part and the position of the obstacle from the map data base responsive to the movement to the specific position being required, let alone disclosing the claimed warning area.

Thus, the combined disclosures of these references fails to establish even a *prima facie* basis, including *all* recited elements/steps, from which a proper determination of obviousness can

be formed. It is therefore respectfully submitted that amended claim 1 is now patentably distinguishable over the cited art.

Independent claims 8 and 16 (as amended) recite similar as claim 1. Thus, independent claims 8 and 16 are now submitted to be patentably distinguishable over the cited art at least for the reasons discussed above.

Dependent claims 4 and 11 are canceled. The rejections over claims 4 and 11 are now moot. Dependent claims 2 and 9 which depend from allowable claims 1 or 8 are also submitted to be patentable at least for that reason and for its recited distinctions over the cited art.

Claims 3 and 10 were rejected under 35 USC §103(a) as being unpatentable over Bancroft, Guldner, Estkowski and further in view of Miura et al. (May 1994) ("Miura"). This rejection is respectfully traversed with respect to these dependent claims as amended herein.

Claims 3 and 10 variously depend from independent claim 1 or 8 which has been described in the above Remarks as being patentable over Bancroft, Guldner and Estkowski. In addition, dependent claim 3 is further limited by such recitations as "... setting an area with a predetermined distance from the warning area as a margin area, wherein the predetermined distance is set by a plurality of characteristics associated with the robot..."

Miura does not remedy the deficiencies of Bancroft, Guldner and Estkowski. Miura disclose a method for modeling obstacles and free spaces for a mobile robot using stereo vision with uncertainty (Abstract). The Examiner cited the impassable, undecided and passable of Miura (Fig. 3 and Section 2, page 3369) as allegedly disclosing the claimed warning area, margin area and safety area. However, this portion of Miura merely describes three classifications of the possible relations between two endpoints. None of Miura's classifications discloses the current position of the robot as claimed, and none of Miura's classifications indicates at least one of the

areas (e.g., warning area, margin area and safety area) in which the robot exists, let alone each of the areas being set based on the distance between the robot and the obstacle, in any manner resembling the claimed invention. It is therefore respectfully submitted that claims 3 and 10 are now patentably distinguishable over the cited art.

Claims 5 and 12 were under 35 USC §103(a) as being unpatentable over Bancroft, Guldner, Estkowski and further in view of Nourbakhsh et al. (U.S. Publication No. 2002/0013641) (“Nourbakhsh”). This rejection is respectfully traversed with respect to these dependent claims as amended herein.

Claims 5 and 12 variously depend from independent claim 1 or 8 which has been described in the above Remarks as being patentable over Bancroft, Guldner and Estkowski. In addition, claims 5 and 12 are further limited by such recitations as a plurality of decided behaviors such as movement, movement refusal, and movement with caution.

The Examiner admits that the disclosure of Bancroft is deficient regarding the decided behavior, and states that this feature is disclosed in Nourbakhsh. However, Nourbakhsh does not remedy the deficiencies of Bancroft. Nourbakhsh discloses a socially interactive autonomous robot (Abstract). The Examiner cited the device subsystem portion (Fig. 3 and ¶¶[0038] and [0042]) of Nourbakhsh as allegedly disclosing the claimed feature. However, these portions of Nourbakhsh merely describe that the device subsystem portion is responsible for controlling a variety of devices, such as sensors, a monitor and the like, in the interaction portion. Nourbakhsh does not disclose deciding the movement case of the robot to a specific position required by the voice and image recognition based on the current position of the robot and the position of the obstacle, let alone the current position of the robot indicating at one of a warning

area, a margin area and a safety area in which the robot exists, in any manner resembling the claimed invention.

Thus, the combined disclosures of these references fails to establish even a *prima facie* basis, including *all* recited elements/steps, from which a proper determination of obviousness can be formed. It is therefore respectfully submitted that dependent claims 5 and 12 are also patentable at least for the reason discussed above and for their recited distinctions over the cited art.

Claims 6 and 13 were rejected under 35 USC §103(a) as being unpatentable over Bancroft, Guldner, Estkowski and further in view of Perzanowski et al. (February 2001) (“Perzanowski”). This rejection is respectfully traversed with respect to these dependent claims as amended herein.

Claims 6 and 13 variously depend from independent claim 1 or 8 which has been described in the above Remarks as being patentable over Bancroft, Guldner and Estkowski. In addition, claims 6 and 13 are further limited by such recitations as recognizing a specific position from the area of the logical product of the designating area narrowed by the designating range specification part and designating area recognized by the image recognition part.

The Examiner admits that the disclosure of Bancroft is deficient regarding recognizing a specific position from the area of the logical product of the designating area, and states that this feature is disclosed in Perzanowski. However, Perzanowski does not remedy the deficiencies of Bancroft. Perzanowski discloses building a multimodal human-robot interface (Abstract). The Examiner cited Fig. 4 and pages 17-18 of Perzanowski as allegedly disclosing the claimed feature. However, these portions of Perzanowski merely describe a multimodal interface where the human user communicates verbally with all the robots through a wireless head-set.

Perzanowski does not disclose deciding the movement ease of the robot to a specific position required by the voice and image recognition based on the current position of the robot and the position of the obstacle, let alone the current position of the robot indicating at one of a warning area, a margin area and a safety area in which the robot exists, in any manner resembling the claimed invention.

Thus, the combined disclosures of these references fails to establish even a *prima facie* basis, including *all* recited elements/steps, from which a proper determination of obviousness can be formed. It is therefore respectfully submitted that dependent claims 6 and 13 are also patentable at least for the reason discussed above and for their recited distinction over the cited art.

Claim 7 and 14 were rejected under 35 USC §103(a) as being unpatentable over Bancroft, Guldner, Estkowski and further in view of Bischoff et al. (October 1999) (“Bischoff”). This rejection is respectfully traversed with respect to these dependent claims as amended herein.

Claims 7 and 14 variously depend from independent claim 1 or 8 which has been described in the above Remarks as being patentable over Bancroft, Guldner and Estkowski. In addition, claims 7 and 14 are further limited by such recitations as a behavior schedule transmission part for outputting a behavior schedule.

The Examiner admits that the disclosure of Bancroft is deficient regarding transmitting a behavior schedule, and states that this feature is disclosed in Bischoff. However, Bischoff does not remedy the deficiencies of Bancroft. Bischoff discloses integrating vision, touch and natural language in the control of a situation-oriented behavior-based humanoid robot (HERMES) (Abstract). The Examiner cited pages 1003-1004 of Bischoff as allegedly disclosing the claimed feature. However, these portions of Bischoff merely describe the implementation of the

integration HERMES, where a user may define the robot's mission as a list of actions that are to be executed sequentially by the robot (Section 4.3, page 1003). Bischoff does not disclose deciding the movement case of the robot to a specific position required by the voice and image recognition based on the current position of the robot and the position of the obstacle, let alone the current position of the robot indicating at one of a warning area, a margin area and a safety area in which the robot exists, in any manner resembling the claimed invention.

Thus, the combined disclosures of these references fails to establish even a *prima facie* basis, including *all* recited elements/steps, from which a proper determination of obviousness can be formed. It is therefore respectfully submitted that dependent claims 7 and 14 are also patentable at least for the reason discussed above and for their recited distinctions over the cited art.

Claim 17 was rejected under 35 USC §103(a) as being unpatentable over Bancroft, Guldner, Estkowski, Miura and further in view of Nakamura et al. (U.S. Patent No. 6,044,321 ("Nakamura")). This rejection is respectfully traversed with respect to these dependent claims as amended herein.

Claim 17 depends from claim 3, which depends from independent claim 1. Claim 1 has been described in the above Remarks as being patentable over Bancroft, Guldner, and Estkowski. In addition, claim 17 is further limited by such recitations as the plurality of characteristics associated with the robot including the size, shape, function, movement speed, braking distance or the like of the robot.

The Examiner admits that the disclosure of Bancroft is deficient regarding the characteristics associated with the robot, and states that this feature is disclosed in Nakamura. However, Nakamura does not remedy the deficiencies of Bancroft. Nakamura discloses an

intelligent cruise control system that is capable of maintaining a car-to-car distance to avoid collision (Abstract). The Examiner cited Figs. 3-5 and column 4, line 19 to column 5, line 25 of Nakamura as allegedly disclosing the claimed feature. However, these portions of Nakamura do not disclose deciding the movement case of the robot to a specific position required by the voice and image recognition based on the current position of the robot and the position of the obstacle, let alone the current position of the robot indicating at one of a warning area, a margin area and a safety area in which the robot exists, in any manner resembling the claimed invention.

Thus, the combined disclosures of these references fails to establish even a *prima facie* basis, including *all* recited elements/steps, from which a proper determination of obviousness can be formed. It is therefore respectfully submitted that dependent claim 17 is also patentable at least for the reason discussed above and for their recited distinctions over the cited art.

Entry of this amendment, which is submitted to condition this application for allowance, is respectfully requested.

Respectfully submitted,  
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